GPS Vehicle Tracker

USER MANUAL

(Model: TK111)

Version 3.0

(Date: Sept., 2012)

CONTENT

Preface 2
Functions & Features 3
System Setup 4
Explanation on SMS Message 4
How to Operate It 5
Arm/Disarm by Phone Calling 5
SMS Control Instructions 6
Specifications 12
FAQs & Troubleshooting 13
Installation 14
Packing List 14
Wiring Diagram 15
Important Notice on Installation 16

Preface

This Mini GPS Vehicle Tracker is the most cost-effective device to track your vehicle or the other objects. It has very small size, so it can be installed in very secret place. The installation & usage is very easy.

This GPS tracker supports tracking by SMS or online tracking website, so it can work alone & the management center is not a must. It is specially designed for individual vehicles, user could use any GSM mobile phone to supervise, control and locate the car without the third party.

On the other hand, if the tracker is connected with the tracking platform, user can realize many extra functions: such as live-tracking many vehicles at the same time on map, playback history, check the real physical address (street name, city name.etc) by SMS.

Read it Firstly:

Please read this manual thoroughly before you use the device; please keep it for future reference.

Attention:

(1) Please keep the device away from the water, humidity, high temperature, heavy dust or strong magnetism.

(2) Please prepare a valid GSM SIM card in advance.

Warning:

We **strongly** suggest user let the professional car electrician to install the system.

Functions & Features

(1) Arm/disarm by SMS or phone call.
(2) Check the car's location, speed & direction via SMS or GPRS network;
(3) Check the car's real physical address (such as city name, street name...(need support of the TS01 or TS03 center);
(4) Check the location directly by the Google map's URL;
(5) Cut off the car power/fuel supply by SMS or by website, to stop the car;
(6) Monitor the voice around the car via telephone;
(7) Free live tracking by website.
(8) Movement Alert:
Once the car is parked, you can send the SMS instruction to put the system in movement alert status. Then, if the car is moving out about 80 meters, the system will send SMS to inform you. It is a very useful function, which enables the tracker to work as the car alarm too;
(9) Geo-fence Alert:
User can set a certain zone by SMS, once the vehicle oversteps the fence, the alarm will send SMS to inform you;
(10) Over-speed Alert.
User can set a certain speed limitation by SMS. Once the vehicle is running over this speed, the system will send SMS to inform you;
(11) Built-in rechargeable backup battery. If the car battery is cut off or low enough, system will send alarm SMS to warn you;
(12) Two kinds of location information; user could locate the precise location by GPS. If there is no GPS signal, user could also locate the car by CPS (cellular positioning system - located by GSM network)
(13) Anti-tamper design in small size, stable, reliable & easy installation.
(14) Anti-robbery switch, send out SMS for help in case of hijack; (optional)
(15) Engine status detection; (optional)
(16) It can upgrade the normal car alarm to GPS car alarm; (optional)

System Setup

User can send SMS instructions to operate the system by any mobile number, but if he/she wants to receive the alert SMS message from the system, the following SMS messages must be sent to the tracker firstly:

Each TK111 has 2 operation passwords: the center password (default: 666666) and the user password (default: 111111). The SMS center can operate the tracker with the center password, and user can operate the tracker by user password. They are separated & will not affect each other.

Please insert a valid GSM SIM card inside the unit. After finishing the installation according to the wiring diagram, please setup the system as following (*CEN must be in capital letter*):

Send the SMS to the Tracker.

This instruction is used to authorize the alarm-received mobile numbers:

CEN666666*10Mobile No.1*20Mobile No.2*30Mobile No.3*

For example, if the user wants to receive the alarm signal with his mobile (+234)8031234567, and wants his wife's number (+234)8057654321 to receive the alarm signal too, he can send the following SMS to the alarm:

CEN666666*108031234567*208057654321*30*

(Mobile No.3 is set as the modem No. of the management center, or let it blank.)

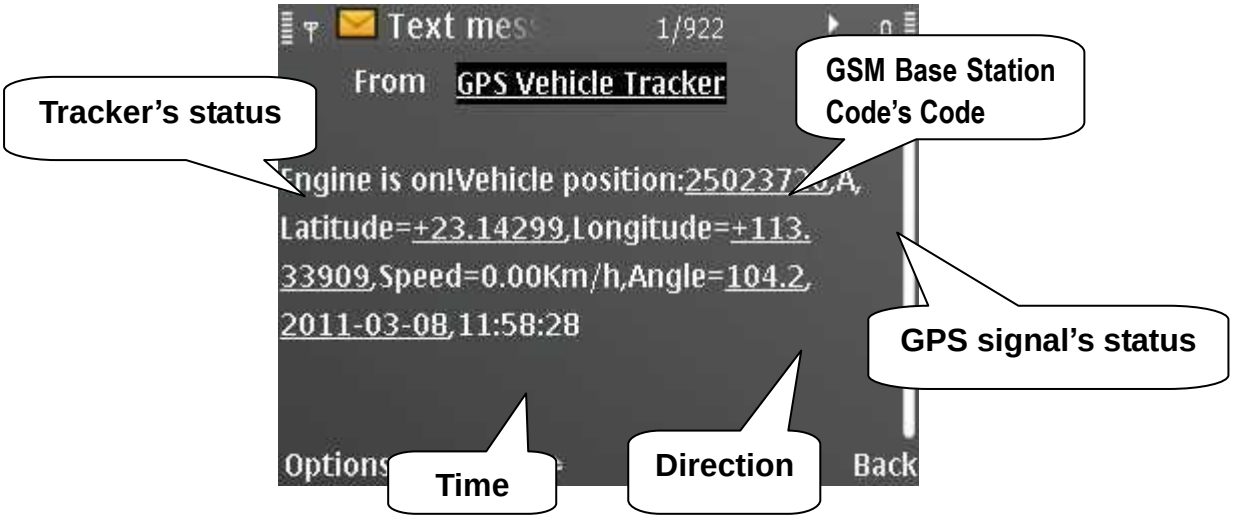
Explanation on SMS Message

When the alarm is triggered, it will send the alert SMS message to the authorized mobile. This SMS alarm message includes:

- ✧ Alarm type. "Movement Alert", "SOS alarm", "Power off alert", etc.
- ✧ Base station's code of GSM networks. The GSM operator can locate the car's position by this base station code.
- ✧ Latitude & longitude. User could locate the car's precise position by help of GOOGLE MAP (http://maps.google.com/) or GOOGLE EARTH (Download link: http://earth.google.com/).
- ✧ GPS signal's Status: A : GPS's signal is available, the car is at broad

outside place; V: GPS's signal is shielded, the car is at the underground; H: there is no GPS signal or GPS's receiver is damaged

- ✧ Speed. The car's speed (=KM/H).
- ✧ Direction: The car's direction is showed in this message. (In coordinates, start from line of the north direction, turn the angle clockwise.)



Example: The above message shows that: the car is stopped, engine is ON. The GSM base station code of the car is 25023720, the car is at outdoors & GPS signal is available (A), the latitude is +23.14299, the longitude is +113.33909, the car's speed is 0.0Km/h, and the car's direction is southeast(start from the north, 104.2 degree clockwise).

How to Operate It

Arm/Disarm by Phone Calling

User could also use the **first** alarm-received mobile phone to call the system SIM card number, so as to arm/disarm the system.

Arm: After hearing several ring tones, if the systems hang up the call automatically, and call back you, it means that the system is armed.

Disarm: After hearing several ring tones, if the system hangs up the call

automatically, and don't call back you, it means that the system is disarmed.

Note:

(1) There is no communication fee for this operation, it is a very convenient way to arm & disarm the system.

(2)The SIM card inside the device must have the function of Caller ID Display.

(3) Only the 1st authorized mobile phone can realize this function.

SMS Control Instructions

The format of the instruction is:

User Password(******)+ Control Code(XXX)

The default user password is 111111.

If the user password is changed, user should send the SMS instruction with the new user password instead of 111111.

XXX is the control code, all the letters must be capital letters or small letters.

There is no space between the user password & the control instruction.

- **111111PSWnnnnnn**

This instruction is used to change the user password. The length of the user's password is 3~6 digits. Users are suggested to change to the new password in use.

Example: User sends the SMS "111111PSW12345" to the system SIM card number, and gets the confirmed SMS "111111PSW12345" in 3 seconds. It means that the user password has been changed to 12345.

- **111111ARM**

This instruction is used to arm the system.

The system will send back the confirmed SMS to you, such as "System Armed! Vehicle position: ……"

- **111111DSM**

This instruction is used to disarm the system.

The system will send back the confirmed SMS to you, such as "System

Disarmed! Vehicle position: ……”

- **111111CHK**

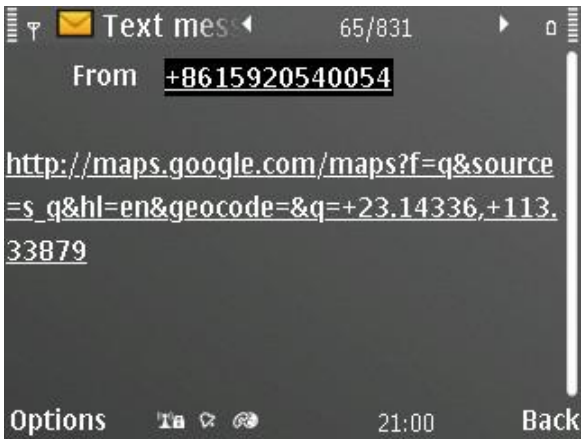
This instruction is used to inquiry the vehicle’s location & system’s status.

The system will send back the SMS, includes the similar information, such as “System Disarmed, Engine off! Door Opened! Vehicle position: ……”

- **111111MAP**

This instruction is used to the location with Google Map Link.

Upon receiving the SMS command, the tracker will automatically send back the SMS including the Google map’s URL, user can use smart phone (GPRS data service is enabled) to open the URL link, the car’s location will be showed on the Google map.



- **<u>Check the Real Physical Address</u>**

SMS command: **111111ADD** (or **111111add**)

When user sends this SMS command to the tracker, the tracker will automatically send back the car’s real physical address (such as city name, street name) to your mobile by SMS. There is no need for the user to setup any server, but it needs supports from our TS03 server.

Remark: (1) The GPRS data service of the tracker’s SIM card must be activated, and the correct GPRS setting is needed (refer to the chapter of <u>the setting of GPRS connection</u>), user can set up the GPRS upload time interval to 0 so as to save the GPRS flow; (2) The physical address depends on the Google map’s address information. If the place has very detailed information on Google map, then the physical address by SMS is very detailed.

- **111111STP**

This instruction is used to cut off the car's power supply or fuel supply, so as to stop the car.

The car will be controlled to stop gradually.

Attention: It is very dangerous to stop the car when the vehicle is running at high speed. We do not take any responsibility to the consequence caused by this action.

- **111111STPN**

This instruction is used to stop the car under the condition of speed limitation.

If the car is running at speed higher than N (KM/H), the instruction will not be carried out. System will send back feedback SMS "No parking, vehicle …"; If the car's speed is less than the value N , it will be controlled to stopped gradually.

After you send 111111STPNto the system already, from then on, if you send 111111STP, it will carry out this operation (111111STPN) always.

You can send **111111STP0** to disable this function, from then on, if you send 111111STP, the car will stop immediately.

Example: N =30. The car is running at speed of 50KM/H, user send 111111STP30 to system. The system will send back SMS "No parking." to warn user that the condition is not met. Once the car's speed is about 29KM/H, the system will automatically carry out this instruction & stop the car.

- **111111RES**

This instruction is used to restore the car to normal status after stopping the car.

- **111111MONP**

This instruction is used to monitor the voice around the car. The SIM card inside the system pays for the communication fee.

The P is the telephone which is used to monitor the voice. When user send out this SMS to the system, the system will call back the telephone P, user could listen in the voice around the car upon picking up the call. If user wants the tracker call back the present phone, the P can be empty, such as 111111MON, that is OK

Example: P =13780012345. If user sends 111111MON13780012345 to system, the system will call back the phone 13780012345 immediately. Once upon pickup the call from the system, user can hear the voice around.

- **111111MON！**

This instruction is used to monitor the voice around the car. The user's telephone pays for the communication fee.

Example: User uses the mobile 13780012345 to send 111111MON! to the system. The system will send back the message: "Ok, please call me in 2 minutes!". If user calls the system via the mobile 13780012345 inside 2 minutes, the system will be automatically connected, and user can monitor the voice around.

- **111111MON:Phone No.**

This instruction is used to monitor the voice around the car. The user's telephone pays for the communication fee.

Example: User uses the telephone 38351400 to carry out monitoring and pay the communication fee, user can send 111111MON:38351400 to the tracker firstly, then use this phone 38351400 to call the tracker, it will be connected automatically to monitor the voice. This setting is stored all the time until you change it to another phone no.

Remark: if the user's alert-received phone no. is the same as this monitoring phone no, you can not use the alert-received phone to call so as to arm/disarm system because it will be connected automatically when you call it.

- **Movement Alert**

111111MOV0 to disable the movement alert

111111MOV1 to enable the movement alert, the present location is the center.

111111MOV？ To check the center's position.

Once the system is armed, the movement alert will be automatically enabled. Once the system is disarmed, the movement alert will be automatically disabled.

Usage: This function enables the tracker to work as a GSM car alarm.

Example: After the car is parked, you can use the 1st authorized mobile phone to call the system. The system will be armed & the Movement Alert function is enabled automatically. Then, once the car is moved about 30 meters away from the parking location, the system will immediately send SMS to warn you.

- **Geo-Fence**

Instruction: **111111FENx(XL:a,YL:b,X:c,Y:d)**

Or **111111FENxXL:a,YL:b,X:c,Y:d**

If x=0, disable the function of geo-fence;

If x=1, enable the function of geo-fence;

XL:a, a is latitude(degree), the range of the value is 0-90）

YL:b, b longitude (degree), the range of the value is 0~180）

X:c, c is the distance of latitude (Meter)

Y:d, d is the distance of longitude (Meter)

Format of SMS instructions:

111111FEN? Check the setting of geo-fence

111111FEN0 Disable the Geo-fence

111111FEN1 Enable the geo-fence, using the parameters of the previous setting

111111FEN1() Enable the geo-fence, using the latitude & longitude of present location, the distance of latitude & longitude are 1000 meters.

111111FEN1(X:c) only change the distance of latitude, the other parameters keep the same.

111111FEN1(Y:D) only change the distance of longitude, the other parameters keep the same.

The function of geo-fence does not have relation with Arming or Disarming.

Example: If the fence is a circle with Radius of 500meters, the coordinates of the circle's center is: latitude:+23.1400, longitude:+113.4500, then the SMS instruction is: 111111FEN1(XL:23.1400,YL: 113.4500,X:500,Y:500). If the vehicle is running across the boundary of the fence, the system will automatically send SMS to warn you.

● Over-speed Alert

111111SPD:X x is the speed in KM/H , maximum value is 250KM/H

(For example: 111111SPD:60, if the car speed is over 60KM/H, it will send SMS to warn you)

111111SPD:? to check the setting of over-speed alert.

How to disable this function: You can send 111111SPD:250 to disable this Over-speed Alert

- **Change the Time Zone**

111111ZON:T T is the time zone in minutes.

Example:

111111ZON:480 : time zone is 8

111111ZON:-60 : time zone is -1

- **Automatic Report by SMS**

111111RPT:NNN:T

NNN represents the 1-3 alarm-received phone no. (N=1 or 0, 1: enable, 0: disable)

T is the time interval in minutes. If T=0, to disable the auto-reporting

Example:

111111RPT:001:5

Tracker sends location by SMS to 3rd number for every 5 minutes;

111111RPT:101:10

Tracker sends location by SMS to 1st & 3rd number for every 10 minutes;

- **Check the IMEI No.**

111111IMEI (or 111111imei)

This instruction is used to check the IMEI No. of the GSM module.

(GPRS ID is the last 14 digits of the IMEI no.)

- **Check the GPRS Settings**

111111WWW (or 111111www)

It will send back the settings by SMS, for example:

63070010769833,web.gprs.mtnnigeria.net,web,web;www.track800.com,8500;TCP;00003

(GPRS ID:63070010769833, APN: web.gprs.mtnnigeria.net, APN user: web, APN password:web, tracking server:www.track800.com, port:8500, TCP: enable, time interval:30 seconds)

- **Compositive SMS Command for GPRS Setting**

User can use one SMS to do all the GPRS setting, the format is:

111111WWW,APN,APN_name,APN_password;IP,PORT;GPRS;TIME

(GPRS:0→disable or 1→enable, TIME: units in 10 seconds)

For example, if the APN name is web.gprs.mtnnigeria.net, APN user name: web, APN password: web, time interval: 3 minutes(=180seconds). Server's IP: www.track800.com, Server's Port: 8500, enable gprs connection, then you can do all settings together in one SMS command:

111111WWW,web.gprs.mtnnigeria.net,web,web;www.track800.com,8500;1;00018

- **Sleep Mode**

111111SAVXX (or 111111savXX)

This instruction is used to set up the sleep mode (power save mode).

The tracker will go into sleep mode when engine is turned OFF after XX minutes. (user need connect the blue line in the white 4-pin connector to Engine On position, so that it can detect this signal. Otherwise, it will not work.)

In sleep mode, the GPRS connection will be closed, but the tracker will wake up once it has incoming call, SMS or alarm triggering.

XX=00, to turn off sleep mode & power save function.

XX=01~99, it is the time for the tracker to enter into sleep mode after it is not activated. (XX is the time in unit of minutes.)

For example: 111111SAV05, if the engine is turned OFF, 5 minutes later, the tracker will go into sleep mode.

Specifications

Size of the main unit:	7.5*5.4*2.5 (CM)
Weight of the main unit:	0.1KG
Working temperature:	-20 ~ 70℃
Humidity:	0 ~ 95%
GSM frequencies:	Quad-band: 850Mhz/900MHz/1800MHz/1900Mhz
GPS chip:	Latest U-blox chipset (or SkyQ)
Working voltage:	12 VDC~24VDC
Power Consumption:	Working current: 50mA; Peak current: 800mA;
Inside Backup battery:	Rechargeable 3.7V 800mAh Li-ion battery

FAQs & Troubleshooting

FAQ	Troubleshooting
Call the tracker, it does not ring	(1) The GSM SIM card has no credit; (2) The SIM card is protected by PIN code; (3) Fix the GSM antenna to open place to test; (4) The SIM card is placed correctly in the slot; (5) Check the connection of the GSM antenna, or change another GSM antenna to test;
Call the tracker, it rings, but it doesn't send back response SMS	(1)The user password is wrong, please use the correct password or reset the password to test; (2) Low power, please use outside 12VDC power supply to power on the unit to test
The mobile can not recieve the alarm informations. The other functions are OK.	(1) The SIM card inside the device has no credit; (2) The SMS instruction is not in correct format; (3) The mailbox of the user's mobile is full;
No GPS signal or GPS signal is weak	(1) Fix the GPS antenna to open place to test; (2) Please check the connection of the GPS antenna; (3) Chang another GPS antenna to test; (4) In cloudy condition, it is a little hard to get the GPS signal, and the GPS coordinate might have some errors.
I can check the location, but I can not get the alert SMS when the car moves	(1) Please setup the system firstly. (authorize SMS-received mobile number, etc); (2) In arming status,the device only warn you once the car moves at about 50 meters away from the parking place;
I can not stop my car	(1) Check the format of the instruction ******STP is correct or not? (2) Replace another relay to test. (3) The relay's control output is suggested to control the power supply loop of the fuel pump. In some cars, it can also used to control the engine ignition loop.
I can't arm/disarm system by phone call	(1) Only the 1st authorized moible number can realize this funciton; (2) The SIM card inside the device must have the function of Caller ID Display.

Installation

Packing List

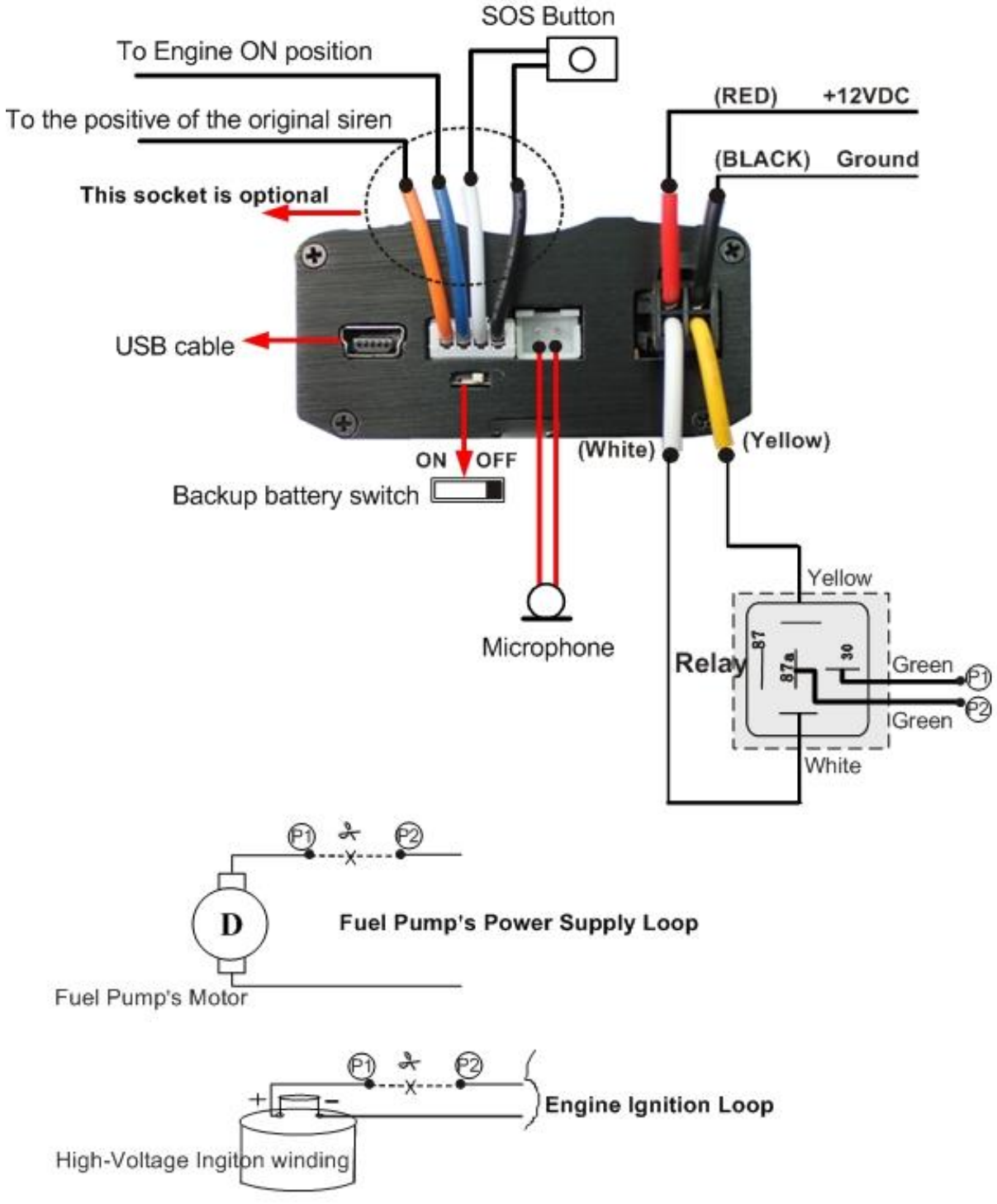
Standard package:

Component name	Quantities
Main unit	1 pc
GPS antenna	1 pc
GSM antenna	1 pc
4-pins wiring harness	1 pc
Cut-off relay	1 pc
Microphone	1 pc

Optional component (not included in the standard package):

The white 4-pins wiring harness (with SOS button, Engine On detection line, and the integration line with the original car alarm) is the optional part.

Wiring Diagram



Notes:

(1). The relay's control output (2 green lines, no polarity) has 2 kinds of connections. It can be used to cut off the engine ignition loop or the fuel pump's power supply loop. It is suggested to control the fuel pump.

(2). Please turn the switch to ON position. It is the switch of the inside backup battery.

Important Notice on Installation

- ✧ We strongly recommend you to ask the professional car electrician to do the installation.
- ✧ Please prepare a valid GSM SIM card in advance.
- ✧ IMPORTANT: Please do not insert or pull out the SIM card when the main unit has power. Before doing this operation, please disconnect the outside power supply lines, and turn off the internal backup battery's switch firstly. The wrong operation might damage the main unit.
- ✧ Please fix the main unit at secret place to avoid being destroyed by theft. Please keep it away from the high-temperature, humidity or strong magnetic object. Please fasten it tightly.
- ✧ While mounting the GPS antenna, the flat magnetic side must be placed downside. There could not be any metal or shielded obstacles around the upside of the GPS antenna, so that it can receive the satellite signal from upside the sky very well, the GPS antenna should be placed at broad & secret place too. It should be drew straight and kept away from the sound box or speaker.
- ✧ While mounting the GSM antenna, it should be placed at broad & secret place where there is no shielded obstacle.
- ✧ The GSM antenna can't be placed along with the GPS antenna in parallel. It should be drew straight and kept away from the sound box or speaker.
- ✧ After installation, please test the system & make sure that it can GSM signal & GPS signal very well. Otherwise, fix the GSM antenna or GPS antenna at other places until the signals are OK.
- ✧ For security, please fix the GSM & GPS antenna in secret places.

Recommended places: (1).Downside the fore windshield class (2).Downside the dashboard (3).Downside water brusher (no metal coat) (4). Inside the upper door edge which is nearby the driving room.